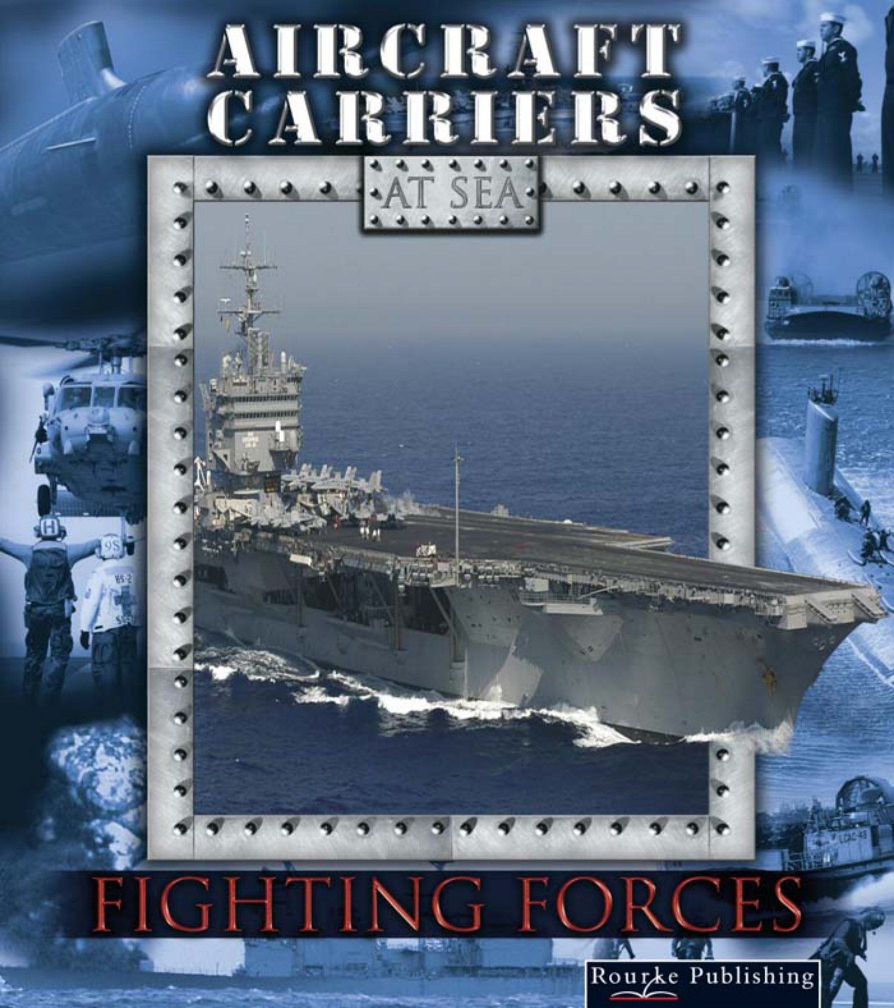
AIRCRAFT CARRIERS

AT SEA



FIGHTING FORCES

Rourke Publishing

FIGHTING FORCES ON THE SEA

AIRCRAFT CARRIERS

LYNN M. STONE

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CHAPTER ONE

AIRCRAFT CARRIERS

American aircraft carriers are the world's largest warships—and the centerpieces of the U.S. Navy's surface combat forces. Aircraft carriers provide a mobile airbase for various types of U.S. aircraft, including fighter jets, fighter-bombers, tanker planes, reconnaissance planes, air-refueling planes, and helicopters.

Aircraft carriers give the United States a powerful military presence on oceans throughout the world. As trouble occurs in, or between, nations, often unexpectedly, U.S. aircraft carriers can be quickly sent to **intervene**. Often, their mere presence in an area is enough to influence events. One advantage of the giant "flattops" is that their aircraft require no landing rights in foreign countries. Planes dispatched from aircraft carriers return to the carriers.

▲

The Nimitz-*class* Abraham Lincoln, *with its classmates the largest of the world's warships, cuts through the Western Pacific.*

▲ *Modern warplanes flying from aircraft carriers (the USS* Harry S. Truman *is pictured here) give the U.S. a "forward presence" many miles from American shores.*

The aircraft aboard a carrier may be used for search-and-rescue operations, reconnaissance, or to attack floating, airborne, or shore targets. Whatever the specific mission, aircraft carriers serve to support American interests and commitments abroad.

The U.S. Navy has a dozen aircraft carriers in service. The newest and most advanced are the **nuclear**-powered *Nimitz*-**class** ships (designated CVN by the Navy). Each stretches 1,092 feet (333 meters), about one-fifth of a mile (one-third of a kilometer)—longer than three football fields! *Nimitz*-class decks hold 85 aircraft. Despite their great size and weight—each displaces approximately 86,607 tons (78,812 metric tons) of water with a full load—the *Nimitz* carriers can furrow through the oceans at more than 30 knots (34.5 miles, 55 kilometers per hour).

FACT FILE ★

Think *really* big when you think about *Nimitz*-class ships. The flight deck covers 4.5 acres (1.8 hectares). The ship's total height, top to bottom, 244 feet (74 meters), is like a 24-story building. Each anchor weighs 30 tons 27.3 metric tons). Just one link in the anchor chain weighs 360 pounds (162 kilograms), the size of a big NFL lineman. Each of the four bronze propellers weighs 66,200 pounds (29,820 kilograms) and spans 21 feet (6.4 meters).

▲

An F/A-18F Super Hornet, both a fighter and a bomber, prepares to launch from the USS Nimitz.

In addition to the *Nimitz* lineup, the carrier fleet includes three 1960s-era aircraft carriers, two non-nuclear-powered carriers, *John F. Kennedy* and *Kitty Hawk* (designated CVA ships by the Navy), and the world's first nuclear carrier, the *Enterprise* (CVA 65).

In the years after World War II (1939-1945), the U.S. Navy built its surface battle forces around the aircraft carrier. Where the battleship was once the symbol of naval might, today it is the aircraft carrier.

FACT FILE ★

DESPITE ITS GREAT SIZE, A *NIMITZ*-CLASS AIRCRAFT CARRIER IS CONSIDERABLY SMALLER THAN THE SUPERTANKER *JAHRE VIKING*. SHIP SIZES ARE DETERMINED MORE BY THEIR **DISPLACEMENT** OF WATER THAN BY THEIR LENGTH. THE *JAHRE VIKING* DISPLACES 564,739 (513,912 METRIC TONS) TO THE *NIMITZ'S* 86,600 TONS (78,806 METRIC TONS).

▲

In the Abraham Lincoln*'s island, a technical seaman—in this case a seawoman—monitors a radar screen during her watch.*

AIRCRAFT CARRIER SPECIFICATIONS

Nimitz Class

Powerplant:
Two nuclear reactors, four shafts

Length:
1,092 feet (333 meters)

Flight Deck Width:
252 feet (77 meters)

Beam:
134 feet (41 meters)

Displacement:
86,607 tons (78,812 metric tons) fully loaded

Speed:
30+ knots (34.5 miles, 55 kilometers per hour)

Aircraft:
85

Ship's company:
3,200; air wing 2,480

Armament:
(dependent upon modification) Sea Sparrow launchers, 20mm Phalanx CIWS mounts (3 on *Nimitz* and *Dwight D. Eisenhower* and 4 on *Vinson* and later ships of class)

Commissioning date, first ship:
1975

Enterprise Class

(*Enterprise* only active ship)

Powerplant:
Eight nuclear reactors, four shafts

Length:
1,101 feet (336 meters)

Flight Deck Width:
252 feet (76 meters)

Beam:
133 feet (40 meters)

Displacement:
80,000 tons (72,800 metric tons) fully loaded

Speed:
30+ knots (34.5 miles, 55 kilometers per hour)

Aircraft:
85

Ship's company:
3,350; air wing 2,480

Armament:
Two Sea Sparrow missile launchers, 3 Phalanx 20mm CIWS mounts

Commissioning date:
1961

AIRCRAFT CARRIER SPECIFICATIONS

John F. Kennedy Class

(*John F. Kennedy* only active ship)

Powerplant:
Eight boilers, four shafts; 280,000 total shaft horsepower
Length:
1,052 feet (316 meters)
Flight Deck Width:
252 feet (77 meters)
Beam:
130 feet (40 meters)
Displacement:
73,214 tons (66,625 metric tons) fully loaded
Speed:
30+ knots (34.5 miles, 55 kilometers per hour)
Aircraft:
85 (approximately)
Ship's company:
3,117; air wing 2,480
Armament:
Sea Sparrow missiles with box launchers; 3 20mm Phalanx CIWS
Commissioning date:
1968

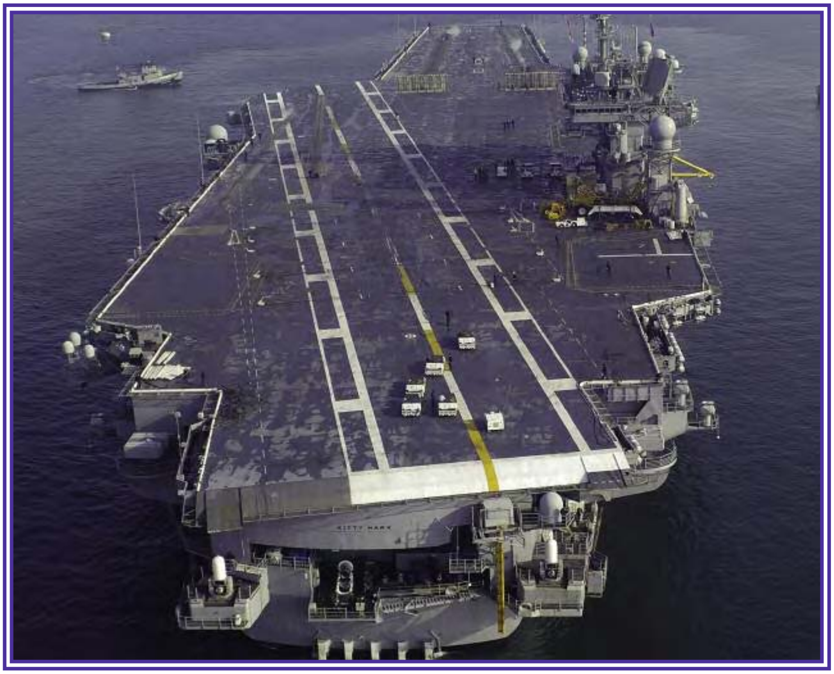
Kitty Hawk Class

(*Kitty Hawk* only active ship)

Powerplant:
Eight boilers, 4 geared steam turbines, 4 shafts; 280,000 shaft horsepower
Length:
1,063 feet (324 meters)
Flight Deck Width:
252 feet (77 meters)
Beam:
130 feet (40 meters)
Displacement:
72,143 tons (65,650 metric tons)
Speed:
30+ knots (34.5 miles, 55 kilometers per hour)
Aircraft:
85
Ship's company:
3,150; air wing 2,480
Armament:
Sea Sparrow launchers, 3 20mm Phalanx CIWS mounts
Commissioning date:
1961

AIRCRAFT CARRIER CHARACTERISTICS

An aircraft carrier is called a flattop because of its long, broad, flat upper deck. To the starboard, or right, side of the deck stands the ship's 150-foot (46-meter) tall island, or tower. The tower includes the bridge, primary flight control center—or "pri fly"—and communications and radar systems.

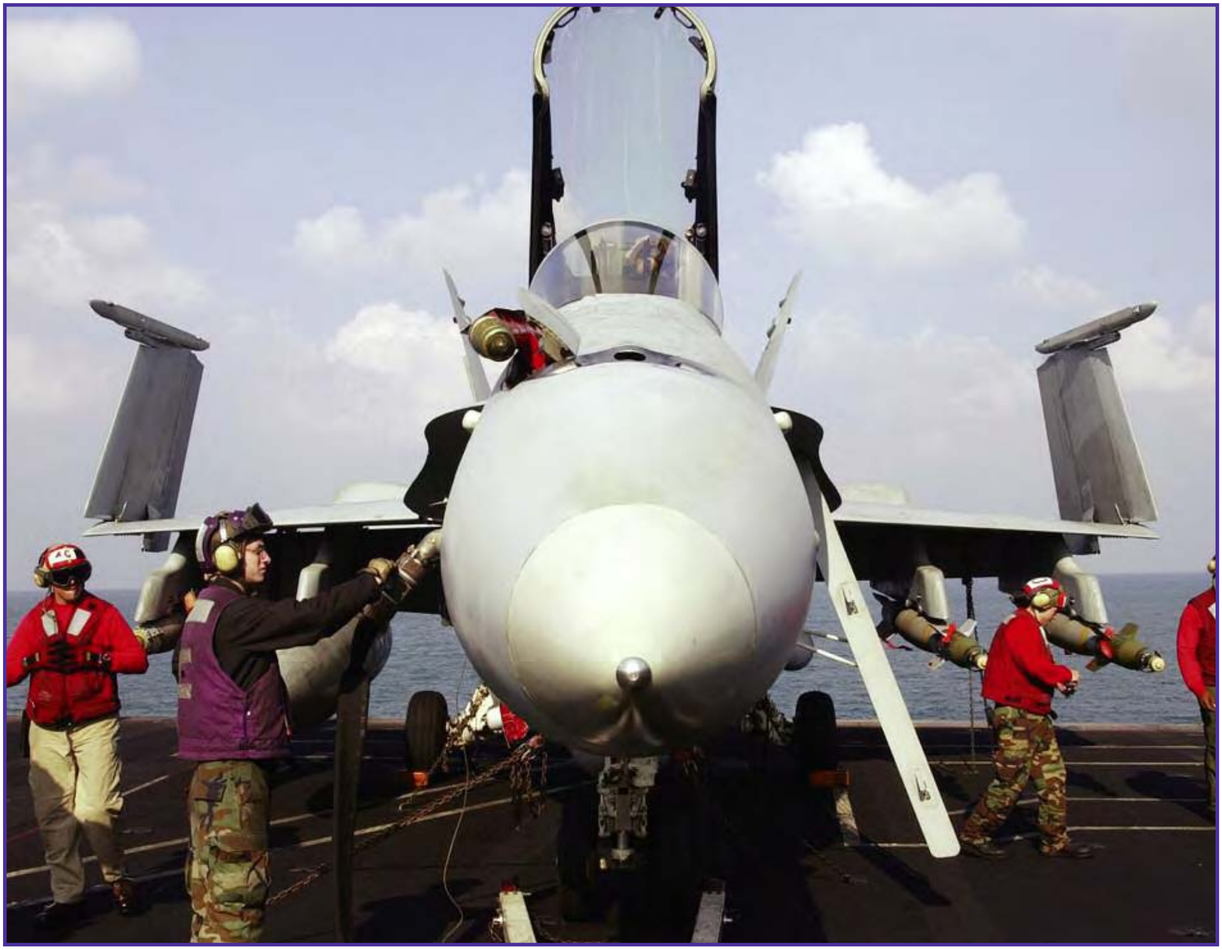


▲
The USS Kitty Hawk, *a non-nuclear-powered carrier commissioned in 1961, shows her long, broad deck.*

An F/A-18C Hornet launches from one of the four steam-powered catapults aboard the USS Harry S. Truman*.*

The center of activity is the flight deck. The deck is not long enough for a conventional plane to reach airborne speed. Four **catapults** on the flight deck do that job. Each catapult, like a massive slingshot, can send a screaming, 37-ton jet (33.7-metric ton) into the air in less than three seconds! During that time, the airplane races from 0 to about 180 miles (290 kilometers) per hour, a safe airspeed, along just 300 feet (91 meters) of deck.

The tailhook of an S-3B Viking prepares to catch an arresting cable aboard the USS Ronald Reagan*, one of the newest* Nimitz*-class carriers.*



▲
Sailors aboard the Harry S. Truman *perform maintenance to an F/A-18C Hornet. Collapsible wings on carrier planes conserve space.*

Each carrier jet has a **tailhook** on the rear portion of the plane. As a plane lands at about 150 miles (240 kilometers per hour), the tailhook catches one of four steel **cables** stretched across the flight deck. The cable brings the speeding aircraft to a total stop in little more than the distance between football goal lines.

The flight deck is used for air traffic. Planes that are not flying are shifted by one of four elevators to the hangar deck below the flight deck. Folding wings on carrier aircraft conserve space. Another 10 floor levels are below the hangar deck with 8 above it, including those in the island.

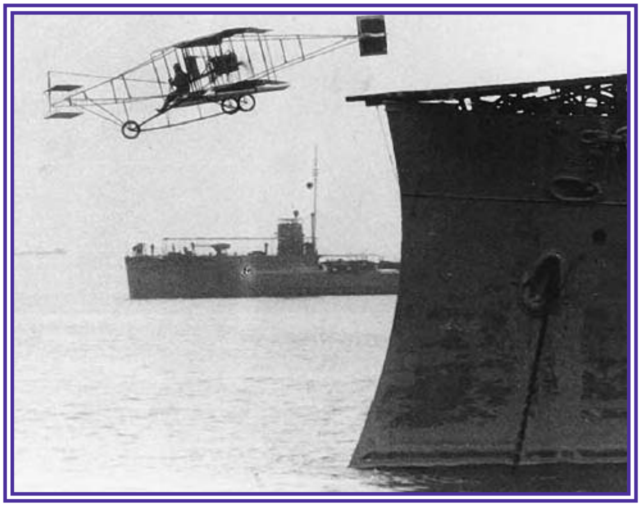
Aircraft carriers carry a minimum of defensive weapons. Deck space is limited, and aircraft carriers are routinely part of groups of combat vessels, often called carrier forces.

FACT FILE ★

OTHER SHIPS IN THE GROUP—**DESTROYERS**, **CRUISERS**, AND **SUBMARINES**—DEFEND THE AIRCRAFT CARRIERS FROM ENEMY SURFACE SHIPS, SUBMARINES, PLANES, AND MISSILES.

EARLY HISTORY

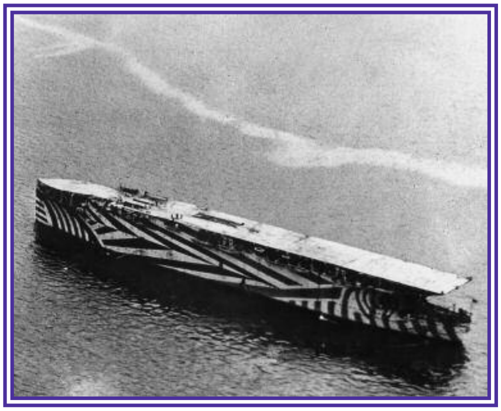
The first manned aircraft flight was by the Wright brothers in 1903. Remarkably little time passed before the idea of flying aircraft from ships took wing. In 1910 Eugene Ely flew a 50-horsepower plane off a platform built onto the deck of an American Navy cruiser. The builder of the plane, Glen Curtiss, thereafter offered to train without charge one Navy officer to assist in "developing the adaptability of the aeroplane to military purposes." Lieutenant T. Gordon "Spuds" Ellyson was that flyer, and he became naval aviator number 1 in April, 1911.



Eugene Ely flies his Curtiss pusher airplane from the deck of the cruiser USS Birmingham *in Hampton Roads, Virginia, November 14, 1910.*

The marriage of airplanes to ships was not strictly an American undertaking. Late in World War I (1914-1918), seven British warplanes made the first strike from a ship against a land target. The first ship with a full-length, flat deck, though, was Great Britain's HMS *Argus* in 1918. The Japanese *Hosho* (1922) was the world's first ship purposely designed as an aircraft carrier.

The first U.S. carrier was the *Langley* (CV1) in 1922. It was converted to a carrier from a coal transport. The first American ship designed and built as an aircraft carrier was the *Ranger* (CV4), **commissioned** in 1934. Four more U.S. carriers were commissioned before the outbreak of **hostilities** with Japan in December, 1941.



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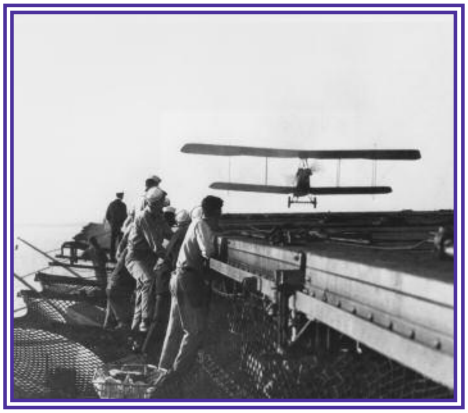
The HMS Argus, *shown here in 1918, served the Royal Navy from 1918 to 1946.*



▲

An Aeromarine 39-B biplane approaches the USS Langley *in 1922.*

CHAPTER FOUR

WORLD WAR II

World War II clearly demonstrated the importance of carrier-based aircraft. It was the devastating attack of Japanese carrier-based planes against the American naval base at Pearl Harbor, Hawaii, on December 7, 1941, that brought the United States into the war. The airplane had become a more **lethal** weapon at sea than the battleship.

FACT FILE

OTHER AMERICAN CARRIERS, INCLUDING THE *BUNKER HILL* (CV17), *INTREPID* (CV11), AND *FRANKLIN* (CV13) WERE SEVERELY DAMAGED DURING WORLD WAR II WITH GREAT LOSS OF LIFE.

A two-seat SB-2C Helldiver scout bomber wheels above the USS Yorktown *after a mission against Japanese ships. Many years later,* Yorktown *was active in the Vietnam War.*

The United States slowly built up its naval air power in the war against Japan in the Pacific. It was a long and difficult process. The Japanese Imperial Navy sank four American aircraft carriers—*Lexington* (CV2), *Yorktown* (CV5), *Wasp* (CV7), and *Hornet* (CV8)—in 1942. And in the course of the entire war, the United States lost 5 big carriers and 6 escort carriers.

The remains of an American B-17 bomber was a small part of the damage carried out by Japanese planes in their attack against Pearl Harbor, Hawaii.

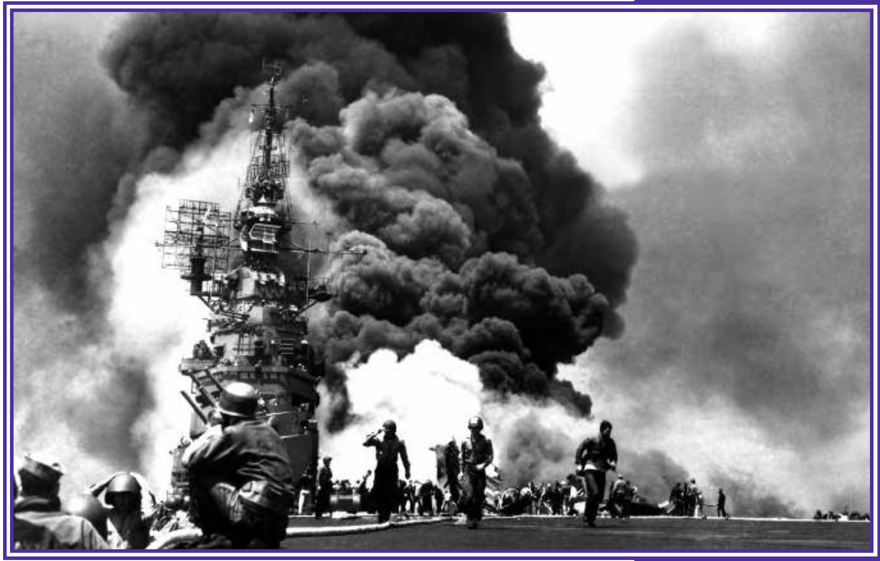
American naval forces eventually dominated the seas and skies of the Pacific. Here scout bombers (SB-2Cs) and TBM torpedo bombers attack Japanese forces in July, 1945.

The tide of the Pacific naval war turned in June, 1942. U.S. carrier-based planes surprised and attacked the Japanese fleet in the Battle of Midway. The Navy planes sank 4 Japanese aircraft carriers and 258 of their planes, crippling Japan's war effort.

The loss of four big American carriers in 1942, however, prompted the Navy to develop the so-called light carrier (CVL) by converting the **hulls** of light cruisers for navy fighter planes. Eventually, U.S. carriers—large, medium, and light—accompanied by a legion of escorts, including submarines, destroyers, cruisers, and battleships, had overwhelming strength in the Pacific.

At the Battle of the Philippine Sea on June 19, 1944, U.S. carrier planes destroyed 395 Japanese planes and the Japanese aircraft carrier *Hiji*. By day's end, Japanese Admiral Ozawa had just 35 operational planes. American pilots called their success the "Marianas Turkey Shoot."

Back home, America's manufacturing might kicked in. Between December 31, 1942, and war's end in August, 1945, the United States Navy commissioned 26 new aircraft carriers, largely in the *Essex* class.



The USS Bunker Hill *survived this suicide plane attack, known as a kamikaze, on May 11, 1945, but 389 of her company died. Late in the war, Japanese kamikazes crashed into American ships with devastating results.*

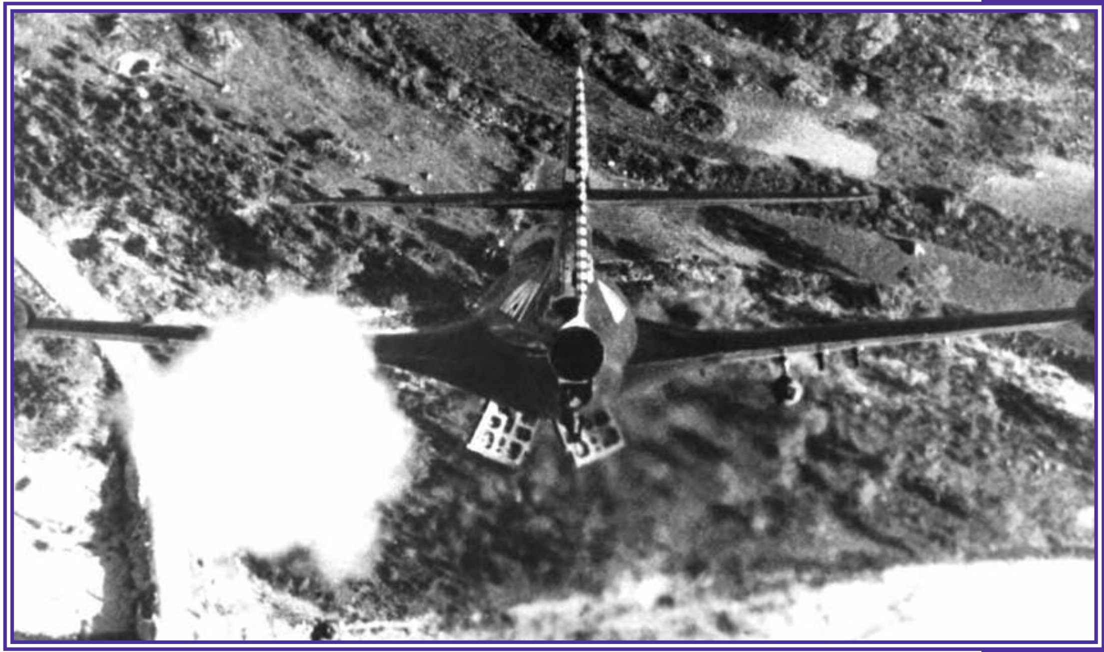
CHAPTER FIVE

AFTER WORLD WAR II

Immediately after World War II, the U.S. Navy upgraded its *Essex* carriers and adapted them for the arrival of jet aircraft. The first carrier-ready jet squadron was established with 16 FH-l Phantoms in May, 1948.

The Korean War (1950-1953) brought American carriers to the defense of South Korea against North Korea and China. Beginning in July, 1950, U.S. carriers began three years of almost continuous operations in Korea. American carrier-based planes launched attacks on enemy lines of communication, combat troops, aircraft, and oil **refineries**.

▲
Navy Corsairs from the carrier USS Boxer *head for targets over Korea during the Korean War.*



An attack plane from the carrier Bonhomme Richard *rockets a North Korean bridge during the Korean War.*

American carrier aircraft returned to combat during part of the Vietnam War (1957-1975), striking at North Vietnamese troops, gunboats, and a variety of land targets. Carriers were also employed in the Persian Gulf War (1991) against Iraq and in operations that began against Afghanistan in 2001 and Iraq in 2003.

FACT FILE

In 1955, the USS *Forrestal* (CVA59), the first of the Navy's supercarriers, was commissioned. In 1961 the USS *Enterprise* became the world's first operational nuclear aircraft carrier.

CHAPTER SIX

THE FUTURE OF AIRCRAFT CARRIERS

By 2005, U.S. aircraft carriers, collectively, could transport about 1,250 aircraft to the far corners of the globe. But ships age, technology advances, and world events often lead to a change in military planning and strategy.

An F-14B Tomcat launches from the Harry S. Truman *flight deck. Planes from the* Truman *and other carriers provided surveillance and air support missions against Iraq.*

Naval fleets, of course, have to change accordingly, so even the impressive American aircraft carrier force of today will slowly be replaced by newer ships and newer planes. F/A-18E/F Super Hornet jets, for example, have been replacing squadrons of Hornets and Tomcats aboard carriers.

▲

The replacement of older fighter/attack jets by Super Hornets is part of an ongoing effort to modernize America's carrier forces.

The most modern carriers, like the USS John C. Stennis, *shown steaming in the Pacific, will not be replaced for many years.*

The last of the *Nimitz*-class carriers, the *George H. W. Bush* will enter service in 2009. Meanwhile, in 2007, construction will begin on the Navy's next generation of aircraft carriers, designated CV78. The first of these ships should be commissioned in 2014, when it will replace the USS *Enterprise*. Another carrier of the future should be ready by 2018 to replace the *John F. Kennedy*.

The CV78 class ships will incorporate new technologies, including better radar. They will also have smaller crews and a more modern nuclear power plant.

GLOSSARY

cables (KAY bulz) — wire ropes on metal chains of great strength

catapults (KAT uh pultz) — apparatuses that hurl an object into the air

class (KLAS) — a group of ships manufactured to the same, or very similar, specifications, such as the *Nimitz* class of American aircraft carriers

commissioned (kuh MISH und) — to have officially been placed into service by the U.S. Navy

cruisers (KRU zurz) — heavily armed warships, smaller than a battleship, and, in recent times, armed with guided missiles

destroyers (duh STROI urz) — surface warships traditionally used to defend larger, slower ships from submarines (modern destroyers are armed with guided missiles for multi-missions)

displacement (dis PLAY smunt) — the water displaced by a floating ship; the tonnage of the water displaced

hostilities (hos TIL uh teez) — serious, often violent disagreements, including open warfare

hulls (HULZ) — the sides, bottom, and deck of a ship; the main, enclosing body

intervene (IN tur VEEN) — to step between or to become involved in

lethal (LEE thul) — deadly

nuclear (NYU klee ur) — providing atomic energy in a controlled, but powerful way

refineries (ree FINE uh reez) — factories that process oil into gasoline and other products

submarines (SUB muh REENZ) — fighting ships that mostly sail under the ocean's surface

tailhook (TALE HOOK) — a steel hook used by a carrier-based airplane to grasp an arresting wire when the plane is landing on the carrier's deck

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